Kids' Body Fat
What's Healthy? What's Not?

Tell someone they're giving off gamma rays and they may think you've been seeing too many sci-fi flicks.

Actually, it's healthy and natural for humans to emit gamma rays.

Measuring those rays is among the sophisticated tactics that a Houston, Texas-based nutrition researcher is using to figure out how much lean (muscle, bone, and water) and body fat is healthy and normal for America's kids as they develop from infant to tot to teen.

At the ARS Children's Nutrition Research Center at Baylor College of Medicine in Houston, biophysicist Kenneth J. Ellis's gamma ray device, officially known as a "whole body gamma counter," is one of about a half-dozen complex instruments that he uses, and in some cases improves, for the specialized job of determining body fat and lean, or what's known as "body composition."

These measurements are the foundation for a new generation of "body-comp charts" that may someday be as widely used as the more familiar height-and-weight tables or body mass index (BMI) charts that are a standard feature in pediatricians' offices across the country.

The new body-comp tables would give parents and physicians an updated way to determine how a child's growth pattern compares with that of healthy, fit kids of the child's age, height, weight, gender, and ethnic background. A parent's concern about a child's recent gain of body fat, for example, could be addressed, and perhaps assuaged, by looking at a body-comp chart to see if the youngster's body fat is within the normal range.

Constructing reliable body-comp charts for infants to teens requires finding and fine-tuning the best technologies for acquiring thousands of measurements from healthy young volunteers. Then those measurements must be analyzed to create the charts.

Having accomplished all that, and much more, during the past 15 years, Ellis's team is now within about 2 years of issuing preliminary body-comp tables based on data from normal, fit, Houston-area Black, White, and Hispanic youth.

These body-comp charts will replace and improve on existing tables that don't reflect today's ethnic diversity, are based on data derived from older technologies, and have other major drawbacks.

The gamma ray machine plays a leading role in this research. It provides inside information about muscle, a "lean" component. Says Ellis, "Gamma rays are emitted from potassium. Most of the body's potassium is in the muscles. So you can use the gamma ray measurements to develop an indirect, but accurate, measure of muscle."

Admittedly, the instruments used in doctors' offices and health clubs today to give a quick estimate of body composition aren't as sensitive as those in Ellis's lab. But that shouldn't create a problem for users of the new body-comp charts. The commonly used devices can simply be calibrated for use with the charts, Ellis points out.

His team is already internationally known for its pioneering work in determining how many calories kids need at various stages of their growth. The new body-comp charts are a much-anticipated sequel that will similarly help parents give their kids a strong start toward a lifetime of good health.—By **Marcia Wood,** ARS.

This research is part of Human Nutrition, an ARS national program (#107) described at www.nps.ars.usda.gov.

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PEGGY GREB (D1687-1)

New body-composition charts would give parents and physicians an updated way to assess kids' growth patterns.

PEGGY GREB (D1689-1)

At the ARS Children's Nutrition Research Center at Baylor College of Medicine in Houston, Texas, research assistant Maryse Laurent prepares to place a sleeping infant into the measurement chamber of the PEA POD, a specialized instrument for accurately measuring infant body fat.